

REMARKS

Status of the Claims

Claims 1 – 8, and 10 – 20, 22 – 25, and 27 are pending. Claim 9, 21, and 26 are canceled. No have been withdrawn from consideration.

Claim Amendments

New claim 27 does not add new matter. The claim finds general support in the specification on page 2, line 23 – page 3, line 2. The residence time of from 1 to 100 ms specified for the reaction finds support on page 1, lines 21 – 22. The residence time of the product stream in the quench area of from 1 to 100 ms finds support on page 1, lines 22 – 24.

Claim Rejections

- I. Claims 1 – 7, 20, and 22 – 25 are rejected in view of 35 U.S.C §103(a), US 6,365,792 to Staph et al. (hereinafter, “Staph”), and US 5,789,644 to Pässler et al. (hereinafter, “Paessler”).

The combination of Staph and Paessler cannot support a *prima facie* case of obviousness. This rejection is based on a misreading of Staph. The Staph invention does not relate to a process for carrying out a high-temperature reaction at a temperature of at least 1500°C and with a short residence time. To the contrary, as will be discussed below, at column 4, lines 4 – 6 and column 4, lines 16 – 28 Staph teaches, indirect cooling can be employed, when a comparatively long residence time is employed and the reaction is carried out at a temperature below 1400°C.

The Advisory Action asserts “Staph discloses that ‘[c]ommon features of the known methods for the preparation of acetylene are that the reaction temperature is above 1400°C and that the residence times are in the region of milliseconds.’ (see Staph,

column 2, lines 63 – 66).” Clearly, this portion of Staph relates to the state of the art. Staph discloses that the high energy expenditure necessary for the generation of the reaction temperature of above 1400°C is a disadvantage. Furthermore, Staph makes clear that such processes involve a heavy formation of soot, which is particularly pronounced at the high process temperatures. Staph stresses that the temperature for its own process shall not exceed 1400°C. No reason existed at the time the present invention was made to use features newly added to the art by Staph and at the same time ignore Staph’s prerequisite that the temperature shall not exceed 1400°C. The usefulness of features of Staph’s method are predicated on this temperature restriction. The reference must be considered as a whole.

Staph discusses the disadvantages of DE-A-44 22 815 (the foreign application to which Paessler claims priority), stating, “[t]he major disadvantage is that the quenching (direct quenching) makes optimum recovery of the energy impossible.”¹ Still referring to Paessler, Staph states, “[t]he high energy expenditure necessary for the generation of the reaction temperature of above 1400°C is a further disadvantage.”²

Referring to its own invention, Staph states, “[i]t is an object of the present invention to reduce the energy requirement in the preparation of acetylene/synthesis gas and in addition to provide the possibility of more effective recovery of the energy employed.”³ Staph describes a process for achieving this objective, stating, “[t]he process according to the invention comprises heating the starting mixture to a maximum of 1400°C.”⁴ Staph also states, “[i]n contrast to known processes, the mean residence time in the reactor is comparatively long – it is generally at least 10 ms.”⁵ Staph explains that when these conditions are met, indirect cooling can be employed.

Applicants respectfully submit Staph does not teach using indirect cooling in a process for carrying out a high-temperature reaction at a temperature of at least 1500°C and with a short residence time. To the contrary, Staph teaches away from such a process. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference ... would be led in a direction divergent from the path that was

¹ Staph at column 3, lines 20 – 22.

² Staph at column 3, lines 31 – 33.

³ Staph at column 3, lines 45 – 48.

⁴ Staph at column 3, lines 56 – 58.

⁵ Staph at column 4, lines 4 – 6.

taken by the applicant.”⁶ Claim 1 of the present application requires indirect cooling to be used in a process for carrying out a short residence time reaction at a temperature of at least 1500°C. By teaching indirect cooling can be employed in a process wherein the starting mixture is heated to a maximum of 1400°C and wherein a comparatively long mean residence time is employed, Staph led persons having ordinary skill in the art in a direction divergent from the path taken by applicants.

II. Claims 1, 8, 10 – 19, 21, and 26 are rejected in view of Staph, Paessler, and US 3,640,739 to Bakker (hereinafter, “Bakker”).

The discussion above regarding the combination of Staph and Paessler applies to this rejection as well. Bakker is cited only with regard to features of claim 8 (and claims that depend from claim 8).

Bakker describes a fire-resistant ceramic. Generally, a brick batch mix or a refractory mix, respectively, is pressed into a desired shape and heated afterwards. However, the heating generally is performed before the reactor being equipped with such a brick batch mix is used. On the other hand, according to the present invention, there is no firing performed before the reactor is used for executing the reaction. The language of claim 8 requires the calcining process to take place owing to the high temperature reaction. Since generally a ceramic is fired before its use, the subject-matter of claim 8 is not obvious to a person having ordinary skill in the art.

III. Claims 8 and 10 are rejected on the ground of nonstatutory obviousness-type double patenting in view of claims 1 and 4 – 6 of US 6,869,279.

Claims 1 and 4 – 6 of US 6,869,279 are not directed to a reactor for carrying out a high-temperature reaction where the reaction mixture is subsequently rapidly cooled in the quench area, characterized in that in the quench area firstly a direct cooling to a temperature in the range from 650°C to 1200°C takes place by supply of an evaporating quench medium and subsequently in the quench area an indirect cooling in a heat

⁶ *In re Icon Health and Fitness, Inc.*, 496 F.3d 1374, 1381 (Fed.Cir.2007), citing *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed.Cir.1994).

exchanger takes place. According to MPEP §804, “[a]ny obviousness-type double patenting rejection should make clear: (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue would have been an obvious variation of the invention defined in a claim in the patent.” Mere allegations that the claims are not distinguishable are insufficient.

IV. Claims 8 and 10 – 18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting in view of claims 3 – 8, 12, 13, 16 – 18, and 21 – 23 of co-pending US Application Serial No. 10/806,232.

Applicants respectfully request these rejections be held in abeyance until at least the claims in the present application or claims 3 – 8, 12, 13, 16 – 18, and 21 – 23 of co-pending US Application Serial No. 10/806,232 are allowed. Until a final version of the claims is established, it is premature to state that the claims of this application would result in obvious type double patenting with respect to other pending claims.

Objections to the Claims

The Office objections to claims 21 and 26 are moot in view of the cancellation of the claims.

Fee Authorization

Please charge any shortage in fees due in connection with the filing of this paper, including any shortage in Extension of Time fees, to Deposit Account 14.1437. Please credit any excess fees to such account.

Conclusion

The present application is in condition for allowance, and applicants respectfully request favorable action. In order to facilitate the resolution of any questions, the Examiner is welcome to contact the undersigned by phone.

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Respectfully submitted,
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A handwritten signature in black ink, reading "Michael P. Byrne". The signature is written in a cursive style with a large, stylized "M" and "B".

Michael P. Byrne
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